<u>What is claimed is:</u>

1. A voice packet communications system, comprising:

an adjustment circuit which evens out the periods of voice packets received from a network, detects the dropout of voice packets, inserts substitute packets into the sequence of said voice packets, and outputs quality information that contains information concerning said dropout of the voice packets and information concerning said insertion of the substitute packets;

a decoding circuit which converts said voice packets adjusted by said adjustment circuit into voice information; and

a judgement circuit which judges the communications quality of the voice packets using said quality information.

2. The voice packet communications system according to claim 1, wherein said quality information includes the number of dropped-out voice packets detected in the monitoring period, the number of substitute voice packets inserted in said monitoring period, and the number of voice packets accumulated in said adjustment circuit.

3. The voice packet communications system according to claim 2, wherein said adjustment circuit comprises:

a drop-out detector which detects the drop-out of said voice packets;

a memory which temporarily holds said voice packets;

a writer which writes said voice packets into said memory;

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a reader which reads out one of said voice packets from said memory in each decoding period in the order in which said voice packets were written into said memory, and which outputs invalid data in cases where none of said voice packets is held in said memory;

a read-out processor which inserts substitute packet into said voice packet sequence instead of said invalid data;

a subtractor which calculates the cumulative number of said voice packets from the difference between the number of voice packets written into said memory by said writer and the number of voice packets read out by said reader; and

a state detector which outputs the detection number obtained by said drop-out detector, the insertion number obtained by said read-out processor and the cumulative number calculated by said subtractor as said quality information in each of said monitoring periods.

4. The voice packet communications system according to claim 2, wherein said judgement circuit calculates a quality evaluation index E using the following equation:

$E = 5 - I \times (\alpha/N) - D \times (\beta/N) - B \times T \times \gamma$

I: insertion number, D: drop-out number, B: cumulative number, N: ratio of monitoring period to decoding period, α, β, γ: arbitrary values.

5. The voice packet communications system according to claim 2, wherein said judgement circuit has a judgement table which stores the relationships between combinations of each

number of said quality information and quality evaluation index.

6.   A voice packet communications system, comprising:

an adjustment circuit which evens out the periods of voice packets received from a network, and inserts substitute packets into the sequence of said voice packets;

a decoding circuit which converts said voice packets adjusted by said adjustment circuit into voice information; and

a judgement circuit which judges the communications quality of said voice packets by comparing said voice information with reference voice information received from the network in accordance with a protocol of the type in which quality is guaranteed.

7.   The voice packet communications system according to claim 6, further comprising:

an accumulating circuit which accumulates said reference voice packets received from said network; and

a reference decoding circuit which produces said reference voice information by converting said reference voice packets input from said accumulating circuit.

8.   The voice packet communications system according to claim 7, wherein said adjustment circuit comprises:

a memory which temporarily holds said voice packets;

a writer which writes said voice packets into said memory;

a reader which reads out one of said voice packets from said memory in each decoding period in the order in which said voice packets were written into said memory, and which outputs invalid data in cases where none of said voice packets

5 is held in said memory; and

a read-out processor which inserts substitute packet into said voice packet sequence instead of said invalid data.

9. The voice packet communications system according to claim 7, wherein said accumulating circuit comprises:

10 a memory which temporarily holds said reference voice packets;

a writer which writes said reference voice packets into said memory; and

a reader which reads out one of said reference voice

15 packets from said memory in each decoding period in the order in which said reference voice packets were written into said memory, and which outputs invalid data in cases where none of said reference voice packets is held in said memory.

10. The voice packet communications system according to

20 claim 7, wherein said reference voice packets are produced by the packet transmitting device copying some of said voice packets.

11. The voice packet communications system according to claim 6, comprising:

25 a reference voice transmitting circuit which is installed in the packet transmitting device in order to produce said reference voice packets storing voice information

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that has not been compressed or encoded, and in order to

transmit said reference voice packets to said network in

accordance with a protocol of the type in which quality is

guaranteed; and

5   an accumulating circuit which accumulates the

reference voice packets received from said network.

          12.   A voice packet communications system, comprising:

          an adjustment circuit which evens out the periods of

voice packets received from a network, detects the drop-out of

10   voice packets, inserts substitute packets in the sequence of

said voice packets, and outputs quality information that

includes information concerning said drop-out of the voice

packets and information concerning said insertion of the

substitute packets;

15   a decoding circuit which converts said voice packets

adjusted by said adjustment circuit into voice information;

and

          a judgement circuit which judges the communications

quality of said voice packets by comparing reference voice

20   information modified according to said quality information

with unmodified reference voice information.

          13.   The voice packet communications system according to

claim 12, wherein said quality information includes drop-out

pattern information that distinguishes between reception and

25   drop-out of the voice packet sequence corresponding to the

monitoring period, and substitution pattern information which

distinguishes between received voice packets and substitute

voice packets in the voice packet sequence corresponding to
the monitoring period.

14.   The voice packet communications system according to
claim 12, wherein said adjustment circuit comprises:

5   a drop-out detector which detects the drop-out of
said voice packets;

a memory which temporarily holds said voice packets;

a writer which writes said voice packets into said
memory;

10   a reader which reads out one of said voice packets
from said memory in each decoding period in the order in which
said voice packets were written into said memory, and which
outputs invalid data in cases where none of said voice packets
is held in said memory;

15   a read-out processor which inserts a substitute
packet into said voice packet sequence instead of said invalid
data; and

a state detector which produces said drop-out
pattern information and substitution pattern information using
20   the detection results obtained by said drop-out detector and
the insertion results obtained by said read-out processor.

15.   The voice packet communications system according to
claim 13, further comprising:

a production circuit which produces unmodified
25   reference voice information;

an encoding circuit which compresses and encodes
said unmodified reference voice information, and which also

produces reference voice packets from said encoded voice

information;

a simulating circuit which uses said drop-out

pattern information and substitution pattern information to

5   modify said reference voice packets into reference voice

packets that have the same drop-out pattern and same

substitution pattern as said voice packets; and

a reference decoding circuit which produces modified

reference voice information by decoding the modified reference

10   voice packets.

16.   The voice packet communications system according to

claim 13, further comprising:

a production circuit which produces reference voice

information;

15   an encoding circuit which compresses and encodes

said unmodified reference voice information, and which

produces reference voice packets from said encoded voice

information;

a simulating circuit which uses said drop-out

20   pattern information and substitution pattern information to

modify said reference voice packets into reference voice

packets that have the same drop-out pattern and same

substitution pattern as said voice packets;

a reference decoding circuit which produces modified

25   reference voice information by decoding the modified reference

voice packets; and

a normal decoding circuit which produces unmodified voice information by decoding said reference voice packets input from said encoding circuit.

17. The voice packet communications system according to claim 12, wherein said judgement circuit is installed inside the packet transmitting device that transmits said voice packets to said network.

18. The voice packet communications system according to claim 17, wherein said quality information is transmitted from said adjustment circuit to said judgement circuit via said network using a packet communications technique.

19. The voice packet communications system according to claim 17, wherein said packet transmitting device comprises:

an encoding circuit which compresses and encodes voice information, and which produces voice packets from said encoded voice information and outputs the voice packets thus produced to said network;

a simulating circuit which uses said drop-out pattern information and substitution pattern information to modify said voice packets into reference voice packets that have the same drop-out pattern and substitution pattern as said voice packets; and

a local decoding circuit which produces modified reference voice information by decoding the modified reference voice packets;

wherein said judgement circuit uses said voice information as said unmodified reference voice information.

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20. The voice packet communications system according to claim 17, wherein said packet transmitting device comprises:

an encoding circuit which compresses and encodes voice information, and which produces voice packets from said

5   encoded voice information and outputs the voice packets thus produced to said network;

a simulating circuit which uses said drop-out pattern information and substitution pattern information to modify said voice packets into reference voice packets that

10   have the same drop-out pattern and substitution pattern as said voice packets;

a local decoding circuit which produces modified reference voice information by decoding the modified reference voice packets; and

15   a local reference decoding circuit which produces unmodified reference voice information by decoding said voice information.